

Chapter 1

Getting Started with Microsoft Office SharePoint Server 2007

MICROSOFT EXAM OBJECTIVES COVERED IN THIS CHAPTER:

- ✓ **Configure Microsoft Office SharePoint Server 2007 Portal**
 - Configure Site Management
- ✓ **Manage Administration**
 - Manage Central Admin UI





If you picked up this book, it's because you're committed to using and administering Microsoft Office SharePoint Server (MOSS) 2007 in your organization, or at least that's your goal. Becoming certified in configuring MOSS 2007 will establish you as the human interface between your company and how SharePoint organizes and presents your company's information, tasks, and goals.

Before launching into the specific content areas involved in configuring MOSS 2007, it's important to take some time to review the basic features included in the latest version of SharePoint Portal Server. If you are familiar with SharePoint Portal Server 2003, you will have some advantages in learning MOSS 2007; however, there are quite a number of new features as well as a completely fresh look and feel to become familiar with.

Once you've gone through the overview of MOSS 2007 and before you actually install and configure SharePoint, you'll need to craft the server architecture that fits your organization's current and future needs. At this point, it's not too early to begin understanding the Central Administration interface of your soon-to-be-created portal site and review basic first tasks.

After you have established your architectural plan for SharePoint, you'll be ready to proceed to planning and implementing the actual installation of SharePoint 2007.

Introducing SharePoint Server 2007

SharePoint Server 2007 is more than just the tools and mechanisms required to organize corporate data content and business intelligence within web pages, lists, and libraries. MOSS 2007, like its predecessor SharePoint Portal Server 2003, is a portal technology.

A web portal is not just a website's index page. It represents a company's gateway into how information is collected, maintained, shared, presented, modified, and secured. A portal can lead into a highly varied environment involving one or multiple sites serving as an intranet to staff and management, an extranet to the customer base, an Internet site for the general public, or some combination of these sites.

The core technology of MOSS 2007 is Windows SharePoint Services (WSS) 3.0. This service is available at no cost for the Windows Server 2003 and Windows Small Business Server 2003 platforms; however, WSS 3.0 doesn't provide the full range of content management tools available in MOSS 2007.

SharePoint Server 2007 offers expanded functionality on top of the WSS 3.0 core including the Business Data Catalog (BDC), business intelligence (BI), Excel Services, Forms Services, and a new and more robust search engine.



Specific knowledge of WSS 3.0 as a stand-alone technology won't be included in the 70-630 exam. Microsoft maintains a separate certification for WSS 3.0 configuration—Exam 70-631: Windows SharePoint Services 3.0, Configuring.

What's New in SharePoint 2007?

Microsoft divides the capacities of SharePoint Server 2007 into six general areas:

- Business intelligence
- Business process and forms
- Collaboration
- Enterprise content management
- Enterprise search
- Portals

Each area contains updated or completely new features available in MOSS 2007.

Business Intelligence

Business intelligence was once the sole purview of the developer or consultant; however, MOSS 2007 puts this valuable capacity in the hands of the site administrator and content manager. Business intelligence is the term assigned to a collection of utilities designed to take a vast array of unstructured data and data types and present them as a chart, spreadsheet, or other organized form for the purpose of analysis. This includes the ability to pull raw data from numerous sources, including those external to SharePoint, and display them as reports or key indicators in order to track and evaluate specific, business-related trends. The following are the key SharePoint workspaces and web parts that collectively make up business intelligence:

Report Center site This is a specific site within SharePoint, created as a central repository for storing reports, libraries, lists, and connections to data sources.

Excel Services This solution is designed to manage and share Office Excel 2007 workbooks as interactive reports.

External data connections SharePoint 2007 allows you to connect to external data sources such as SAP and Siebel and integrate information from those sources into lists, libraries, and web parts within SharePoint.

Key performance indicators (KPI) Specialized lists and web parts in SharePoint let you visually track progress made toward specific business goals.

Dashboards These are web part templates that you can use to collect information from a variety of data sources, such as charts, KPIs, metrics, and reports, and display the information in a single interface.

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Data filters Using filters, you can display only a subset of a data collection, designing the presentation for specific audiences that need to see only the information that's relevant to them.

Business Data Catalog The BDC is a SharePoint shared service that accesses data from numerous back-end applications that exist outside SharePoint Server and combines that information into a single report or profile.

Business Process and Forms

Although we don't quite live in a paperless society, forms are now more commonly electronic than printed, and they maintain their place at the core of an organization's business process. Electronic forms are provided in SharePoint by InfoPath Forms Services, and they can help you collect and validate information that drives your business processes. The key to moving and tracking forms through your system is utilizing SharePoint's built-in workflow templates to automate the journey of business forms through your process.

Workflows provide a system of contact and review points as forms and other documents proceed from the beginning to the conclusion of a task. They also facilitate collaboration between team members and other partners in a particular project. The workflow process contains several decision points:

Approval This workflow option directs a form, document, or item to an individual or group for approval.

Collect Feedback This workflow option directs a form or document to an individual or group for feedback.

Collect Signatures This workflow option directs a Microsoft Office document to a group to collect digital signatures.

Disposition Approval This workflow option lets authorized personnel decide to retain or delete expired documents.

Group Approval This workflow option allows you to choose workflow approvers from a hierarchical organizational chart and allow these approvers to use a stamp control instead of a signature.

Three-state This workflow option is used to track and manage large volumes of business process forms, documents, or issues such as project tasks.

Translation Management This workflow option creates copies of documents that need to be translated to other languages and assigns translation tasks to specified teams or team members.

Using web browser-based forms lets employees in your organization fill out forms without having to print hard copies from the browser. The forms are created by Office InfoPath 2007, which provides a central repository for all of the business forms your organization manages. As with all other documents and information in SharePoint, you can determine whether you want a form to be distributed just within your company's intranet or share it with customers, partners, or the general public using an extranet or Internet site.

Since you haven't installed SharePoint Server 2007 yet, the exercises in this chapter are designed to help you learn more about MOSS 2007 and related technologies and solutions. Exercise 1.1 will help you learn about using InfoPath within SharePoint.

EXERCISE 1.1

Learning More about InfoPath

1. Open a web browser, and go to <http://office.microsoft.com>.
2. Click the Products tab.
3. In the menu on the left under Servers, click SharePoint Server.
4. In the Microsoft Office SharePoint Server search field, type **InfoPath**, and press Enter.
5. In the search results list, click Export InfoPath Form Data from a Library to a Spreadsheet.
6. Review the tutorial on this page, and then add the web page to your Favorites list in your web browser. You'll need the information when you work with forms in Chapter 13, "Using Business Forms and Business Intelligence."

Collaboration

Collaboration is the one factor that comes to people's minds when they think of SharePoint. MOSS 2007 provides a specific set of utilities that allow project teams, departments, divisions, or entire companies to work together to attain a common goal. Site templates, blogs, wikis, and RSS feeds are all web parts that can be used for collaboration. Office Outlook 2007 can interact with elements in SharePoint. You can use Project Management to manage a set of tasks that can be accomplished using different web parts and web part configurations. SharePoint collaboration tools are how these jobs are created, managed, and completed within the MOSS framework.

Site templates You no longer have to create a site from scratch; instead, you can use one of SharePoint's built-in site templates to suit your needs. Site templates are organized by function or purpose, so you can simply select the template that most closely meets your needs. For instance, you can select a Meeting Site template to manage the annual stockholder's meeting or a series of frequently recurring events such as a weekly staff meeting.

Blogs and wikis A new feature in MOSS 2007 is support for both blogs and wikis. These information-sharing methods are common on the Web, and almost everyone has used them from time to time. Now you can leverage these data storage and sharing formats within your company by enabling them in SharePoint.

RSS feeds Really Simple Syndication (RSS) technology is another well-known method of periodically receiving updated information on specific topics or subjects. Use RSS to subscribe to a blog in SharePoint and get the latest data updates.

Office Outlook 2007 collaboration You can use Outlook to seamlessly share information back and forth between your email or calendar and SharePoint. For instance, you can add an item to a discussion group in SharePoint by sending an email to that group. You don't have to open SharePoint as a separate application but instead can add information to MOSS directly from Outlook.

Project Management Never lose track of who is assigned to what project or how close to completion a task is again. Projects can be organized in lists or charts, such as a Gantt chart, to show you, at a glance, all of the details you need to manage job assignments.

Enterprise Content Management

Content management is more than just knowing which document library contains your author's contracts. Documents are not containers of static content anymore. After creation, content is subject to modification, versioning, and workflow. Addressing the needs of the enterprise, MOSS 2007 divides this arena into three distinct categories, all with multilingual publishing support. The categories are document management, records management, and web content management.

Document Management

Document management consists of the processes of creating, accessing, modifying, publishing, storing, and tracking documentation within your organization. Document management contains the following tools to enhance this content management form:

Document Center site template The Document Center site template is one of the default site templates native to MOSS 2007. It provides document management for large-scale companies with functions including checkout and check-in for editing, versioning, auditing, and support for various document formats. Support for converting one document format to another is also available.

Translation Management library In the realm of multinational corporations, you will likely need to manage documentation that can be translated into different languages. This library enables you to create, store, and provide workflow, as well as manage by document type all your multilingual documentation.

Microsoft Office 2007 integration Not only can you control document management from within the SharePoint 2007 interface, but you can also create, manage, and initiate workflow directly from Microsoft Office client applications such as Word and Excel 2007.

Records Management

Records management may seem to be just document management renamed, but a company's official records represent the history, knowledge base, and legal documentation for the organization. As such, corporate records require specialized management based on the company's relevant policies as well as the regulations and laws that apply.

Records Center site template The Records Center site template is the main utility within SharePoint for managing the maintenance and retention of business records; it provides a records collection interface, records routing, records vault capacities, and information policy management tools.

Information management policies Just mentioned in conjunction with the Records Center site template, information management policies allow you to enforce compliance across the enterprise to all corporate policies and legal regulations that apply to records management.

Information rights management This SharePoint capacity lets you limit what actions a person can take on a document that has been downloaded from SharePoint. Information rights management (IRM) encrypts documents that have been downloaded from MOSS libraries or lists so that what users can do with the documents depends on the permissions those users have. Limitations include whether a user can decrypt the files, print records, or copy text from records. IRM is built on top of a certificate-based infrastructure and allows users to restrict access to a document by both name and by certificate. This capacity focuses on what specific tasks users can perform when accessing content.

Microsoft Exchange Server 2007 integration Emails are considered formal business documents, and although sometimes jokes or other personal content are transmitted across a company's email system, those emails are actually the property of the corporation. Not only can a user send an email directly to a Records Center site, but information management policies can be directly applied from SharePoint to managed email folders in Exchange.

Web Content Management

Web content management is an obvious capacity within SharePoint since MOSS uses a web interface to allow access to all its tools and information for Internet, intranet, and extranet sites. Although most people may think that the site administrator or webmaster governing the SharePoint site collection must be the person to add or modify content, content presentation, and content organization, in fact SharePoint users can access many tools to control the information for which they are directly responsible:

Office SharePoint Designer 2007 Office SharePoint Designer 2007 takes the place and performs the functions of Microsoft FrontPage for SharePoint Portal Server 2003; it is the primary web design tool for SharePoint Server 2007. Although SharePoint is very customizable, a number of elements cannot be modified with the tools native to SharePoint. You can use SharePoint Designer to create a new master page or modify page layouts without having to be a software engineer. The designer utilizes Cascading Style Sheets (CSS) technology to enable you to make changes across your entire MOSS site collection.

Default master pages and page layouts You don't have to use Office SharePoint Designer to create the look and feel you want for your sites. The master page, page layouts, and content pages native to SharePoint 2007 are varied enough to suit almost anyone's needs. For example, you can select a particular content page such as a News Content page to specify how information is presented and modified.

SharePoint site templates SharePoint 2007 contains a number of default site templates that you can choose based on the purpose and function of the site you want to create. These are the five general areas for site templates:

- Collaboration
- Custom
- Enterprise
- Meetings
- Publish

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Each of these areas contains a variety of specific templates that serve particular requirements within that category. For instance, in the Publish category, the site templates are News Site, Publishing Site with Workflow, Collaboration Portal, and Publishing Portal.

Microsoft Office 2007 format integration SharePoint Server 2007 has a Document Conversions feature that, when enabled, lets you convert Office 2007 documents such as Word documents to web pages. You can even convert Office InfoPath forms written in XML into web content.

HTML Content Editor This utility allows you to access the underlying HTML markup language on any web page and modify the source. This is handy when you create page content in the What-You-See-Is-What-You-Get (WYSIWYG) window and how it renders is not quite how you want the content to appear.

Automatic site change adjustment In SharePoint Server 2003, when you changed the web page structure of your site and moved a page to a different location, you needed to manually edit all the links that led to that page. MOSS 2007 automatically changes the site navigation links, correctly updating and renaming them.

Managing website variations It's said that "one size fits all" is a myth, and it certainly is with websites including SharePoint site collections. In today's international business environment, websites often need to be presented in a variety of languages. SharePoint's Variations feature lets you publish your source site in a variety of languages including English, French, and Japanese. Additionally, the rendering of the source site can be modified for geographic region and browser device type (PC or mobile, for example).

Enterprise Search

Office SharePoint Server 2007 has vastly improved its search abilities over its predecessor. You can use Enterprise Search not only to locate the right document or piece of data but also to find the right person, such as a subject-matter expert to fill a particular need. MOSS 2007 search uses the following abilities:

Searching Center site Like a lot of other SharePoint resources, search capacities are contained within a centralized site where you can initiate searches and filter results.

Finding documents and people As mentioned previously, you can find both data and data experts using SharePoint search. Search queries will span across document libraries, information lists, and even user MySite sites to locate results matching your search string.

Searching enterprise applications SharePoint search also has the ability to go through enterprise applications such as SAP, Siebel, or customized databases in its quest to provide the information you need.

Portals

Portals are gateways into a large organized repository of data and data management tools. SharePoint 2007 portal technology has advanced in providing greater personalization of its portal sites. For instance, individual users can now create personal MySite websites within SharePoint that act as a portal to any personal profiles, documents, graphics, lists, or other

information directly relevant to them. This information is searchable by SharePoint Enterprise Search, and each time a user updates their MySite with information about training classes they've recently completed or a project they've just concluded, you can find them and access the person's expertise.

Any SharePoint solution you've reviewed in the "What's New in SharePoint 2007?" section of this chapter can be accessed through a dedicated portal site, meaning that you can create and manage gateways to each major piece of functionality provided by SharePoint as well as the site collection as a whole. Portals can be designed to fit your company's functional activities or along departmental lines. Each portal then operates like a large container for the information and activities it contains.

Understanding exactly which features are supported in various editions of WSS and SharePoint Server can be difficult to sort out. Exercise 1.2 will show you how to get the detailed information you need.

EXERCISE 1.2

Downloading the Microsoft Office SharePoint Server 2007 Products Comparison List

1. Open a web browser, and go to <http://office.microsoft.com/en-us/sharepointserver/HA101978031033.aspx>.
2. Click the download link that matches the version of Excel you have on your computer.
3. Select Save or Save to Disk.
4. Navigate to the folder on your computer where you want to save the products comparison worksheet, and click Save.
5. When the worksheet is saved to your computer, close your web browser.

Planning SharePoint 2007 Architecture

Before you start reaching for the SharePoint 2007 installation disk and slipping it in the server you plan to use to start building your site collection, you will need to develop a plan for the layout and deployment of SharePoint's architecture. This is a lot like saying before you build a house, you first have to draw up the blueprints, but it's not as simple as that. As the architect for your company's SharePoint implementation, you have several major tasks before you:

- Architecting with SharePoint components
- Architecting SharePoint server farms, shared services providers (SSPs), and topologies
- Architecting the SQL database infrastructure

Architecting with SharePoint Components

Just as you'd expect an architect designing your home to be familiar with the tools required to plan for and build your house, you will need to learn the components contained within SharePoint that you can use to build your organization's site collection. Although some design components are physical, such as the actual machine your SharePoint site collection will live in, many others are logical. For instance, SSPs are logical constructs that allow various services to move across numerous physical servers in a server farm. The following sections are a high-level view of SharePoint architecting components.

The Server Farm

At its most basic level, a *server farm* is a collection of physical server iron and logical servers grouped in a single location. This collection is also known as a *server cluster* or *data center*. The most common implementation of a server farm is a group of web servers utilized by a web hosting company or Internet service provider (ISP). Application software can be deployed on a server-by-server basis, or a single application can span numerous physical servers.

Although the server farm exists physically, as far as architecting SharePoint is concerned, the farm is administered logically as part of a single entity, which in this case will be all the components that will ultimately make up your site collection. The tool that SharePoint 2007 provides to administer the farm is called the SharePoint Central Administration tool.



This tool will be introduced later in this chapter in the section "Introducing the Central Administration Interface."

Utilizing a server farm on which to build your SharePoint infrastructure lets you provide centralized access and backup control as well as load balancing to manage many server requests. The logical server farm is a container for the following SharePoint design components.

Shared Services Providers

SSPs exist at the next level below the server farm. They are the logical environment that contains all of the particular services you want to make available across your web applications and SharePoint sites. Typically you would use only a single SSP in your server farm, but it is possible to create multiple SSPs. Multiple SSPs within the server farm are necessary if you need to create a security boundary between specific services. SSPs can contain the following services:

- Excel Calculation Services
- Index Services
- Search Services
- Web Services

Database Services

Database services are composed of the actual server that contains one or more databases for SharePoint. Within database services, SharePoint 2007 specifically uses SQL content databases to contain site collections, and a specific content database is created for each of the web applications operating in the server farm. Database services for SharePoint can be provided by a dedicated server running databases from other applications that provide SQL database functionality such as the following:

- Microsoft Identity Integration Server (MIIS)
- Microsoft Operations Manager (MOM)
- Systems Management Server (SMS)

In addition, SharePoint can also use SQL Server 2005 Express.

Web Applications

In general, a web application is any application accessed over a network using a web browser to provide a service. Common web applications include blogs, discussion forums, and wikis. Within the context of SharePoint and existing below the level of the SSP, web applications are the logical components that are physically associated with SharePoint's Internet Information Server (IIS) websites. Only one web application can be attached to an IIS website. Individual web applications are used to access a particular entry point in SharePoint and may use a content database created specifically for the application or an already existing database.

SharePoint Site Collections

A SharePoint site is an individual website that acts as a single container or point of access to web parts, libraries, lists, and other sites. A *site collection* is a grouping of SharePoint sites that are all associated with a root or top-level site. For example, you can have a top-level site called /bumblebee. Members of the /bumblebee site collection can include /bumblebee/hive, /bumblebee/honey, and /bumblebee/drones. Just as in any other website, a SharePoint site collection can drill down as deep as you want. For instance, you can create a site and subsite path such as /bumblebee/drones/sales/regions/northwest.

The top-level site exists directly under the level of the web applications. It is usually the portal site for your business or organization. Portal sites are also referred to as *root* or *root-level* sites since they occupy the "root" of the site "tree." Root-level sites are designated by a forward slash (/). Paths such as /bumblebee/honey or /bumblebee/drones/sales/regions/northwest are known as *managed paths* and are the locations where new sites or site collections can be created within a web application.

The lowest level within a site collection is the site content. Site content can be anything that is contained or displayed within an individual site such as web part pages, web parts, document libraries, link lists, and so on.

Architecting SharePoint Server Farms, SSPs, and Topologies

As mentioned earlier in this chapter, server farms are both physical collections of server iron and logical collections of servers. Your organizational plans may require one or several server farms to be designed and implemented. You not only will need to know how to determine how many farms you will need but how to design an individual farm.

Once you have determined the design for your farm, you will need to implement it using a particular design topology. The network and server topology you choose will usually follow the design of your server farm(s), which is based on the functional or organizational requirements of your business.

Designing SharePoint Server Farm Architectures

In addition to the specific SharePoint design components previously mentioned, a number of factors will determine whether you design a single server farm or multiple server farms. The following are the key issues you will need to consider when deciding on developing a single server farm or multiple server farms:

- Licensing
- Availability and service-level agreements
- Performance and scalability
- Organizational and security requirements

Licensing

You will need to purchase a license for each physical server on which you intend to install SharePoint Server 2007. Two types of MOSS 2007 licenses are available for purchase, but only one license type can be used on a single server or a single server farm:

Microsoft Office SharePoint Server 2007, Server License This license is required to run Office SharePoint Server 2007 in client/server mode. You should use this license with the requisite number of Client Access Licenses (CALs) appropriate for your organizational needs. This license is used on servers and server farms that face your internal network and provide content to your organization. Remote employees can gain access to a server or server farm using this license over the Internet via a VPN as long as the appropriate number of CALs have been purchased.

Microsoft Office SharePoint Server 2007 for Internet Sites You can use the software for Internet-facing websites only. All content, information, and applications must be accessible to nonemployees. This license has all the features of the Enterprise Edition of Office SharePoint Server. This is a per-server license that does not require the purchase of CALs.

If you intend on providing SharePoint 2007 sites and content both to an employee-oriented intranet and to customers on the Internet, you will need to design and deploy at least two server farms, one for each license type.

The issue of an extranet site for partners or customers has several licensing solutions:

- You can create an extranet site on the server farm that hosts the company intranet and uses the Server License. If you select this option, you'll need to purchase the required number of CALs. This option is more appropriate for partners than customers and is the best choice if you need to collaborate with a small number of partners.
- You can create an extranet site on the server farm that hosts your company's Internet site and uses the Internet Sites license. This option doesn't require you to purchase CALs for partners, customers, or internal employees working on collaborative projects with them. However, you will not be able to create sites in this server farm that only internal employees can access. This is the best choice if you need to communicate securely to a large number of partners or customers.
- You can deploy a server farm to be used for extranet sites servicing your partners and customers and use the Internet Sites license. This option doesn't require you to purchase CALs for partners, customers, or internal employees working on collaborative projects with them. However, you will not be able to create sites in this server farm that only internal employees can access. This is the best option if you need to collaborate with a large number of partners.



Real World Scenario

Choosing the Correct Licensing Plan

You are a SharePoint administrator for a midsize university and you are developing a SharePoint Server site collection for the Economics department. In this case "Economics department" is the formal name of a department at our mythical university. This is a pilot project, and if it's successful, you will roll out SharePoint to all of the other university departments using the same licensing scheme. You need to find the right licensing plan for your organization and specifically for the current project.

The Economics department's classrooms, computer labs, and administrative offices have 350 desktop computers. You want a three-year license renewal plan with a renewal option for one to three years. You would prefer to buy from a Microsoft Authorized Large Account Reseller. To begin your investigation, you visit the `office.microsoft.com` website at the following URL: <http://office.microsoft.com/en-us/products/FX101865111033.aspx>.

You'll need to find out more about volume licensing plans, so click the link in the first bullet point on this web page, [Find Out More About Volume Licensing](#). On the Microsoft Volume Licensing Programs page, click the first available link in the body of the page called [Volume Licensing Programs](#) in order to compare a list of volume licensing programs.

On the [Buy or Renew Licenses Through Microsoft Volume Licensing Programs](#) page, scroll down to [Step 2: Review Microsoft Volume Licensing Programs](#), and review the specific information related to the four licensing plans presented in the four columns of the table. You should find that the [Select License](#) option best fits your needs.

Availability and Service-Level Agreements

Availability and service-level agreements are two related concepts that have to do with the level of accessibility you have regarding a service or data. In general, availability is defined as a ratio between the amount of time the service or data is accessible and the total amount of time measured. One hundred percent availability would mean that the service or data is available whenever the system (which is SharePoint in this case) is operational. Few systems, if any, are available 100 percent of the time, but the term *high availability* defines a system that is available 99.999 percent of the time (also known as the *five 9s*).

A service-level agreement (SLA) is usually defined in a contractual agreement between a network service provider and customer and specifies the types of services the network service provider will make available to the customer for a particular fee.

One hundred percent availability relative to SharePoint would be the most desirable but, as just mentioned, is a practical impossibility. In real life, not absolutely all information and services need to be available to all users or customers 24/7. As you design your SharePoint site collection around the needs of your company, you'll need to determine the level of availability necessary for the site collection as a whole and for the different services and information provided. In a high availability scenario where you are providing mission-critical data and services, your server farm design will likely need to include a number of systems to keep SharePoint available in the face of a disaster, such as a catastrophic server failure. The following is a brief discussion of such contingencies.

Develop a failover system so that in the event of a hard drive crash or other system failure, another system will immediately take over the original system's function until the failed component can be replaced. For instance, if you are using a storage area network (SAN) and your primary network path fails, a secondary path can be immediately implemented so there is no interruption of service. The failover should be transparent to the end user. This scenario is sometimes called a *hot server* scenario.

In any server farm or cluster, all of your information should be backed up. This is usually done by backing up server data onto tape on a rotating basis. The backup tapes are then transported to a remote site for storage. In the event of a server disaster, any failed hardware components can be replaced, and the data can be restored from the tape. This doesn't provide an immediate return to availability but will ensure that the information will again become available, most likely within a few hours. You can also restore taped data to a backup server so that, rather than repair the original server hardware, you can restore the data to another piece of hardware that will "step in" for the original. This scenario is sometimes called a *cold server* scenario.

A variation on these themes is *mirroring* or *replication*, which is where the primary server periodically copies its data to a backup server. In the event that the primary server fails, the backup server takes over, utilizing the data from the most recent replication. This scenario is sometimes called a *warm server* scenario.

The plans referenced so far are usually implemented in the same physical location; that is, all of these plans are typically executed within the same physical server farm or data center. In an extreme situation, when the services your company supplies absolutely must be available, you can create a plan that includes failover or recovery services at a completely different location.

As part of Microsoft's Software Assurance licensing program, free licenses are provided for servers implemented in the cold server scenario but are not available for the warm or hot server scenarios.



It's not within the scope of this book to provide an exhaustive list of disaster recovery methods for SharePoint or for server farms in general. For more information, visit Microsoft's TechNet site at www.microsoft.com/technet/windowsserver/sharepoint/v2/reskit/c2861881x.mspx.

Although you can implement most of these recovery methods in a single server farm, you'll enjoy greater fault tolerance if you use more than one farm, even if you do so at the same physical location. The safest recovery implementation is to deploy two or more server farms in two or more physical locations. However, in any disaster recovery plan, you have to take into account the cost to your company for every minute your services and data are unavailable vs. the cost to your company to implement your disaster recovery plan. Most organizations don't have the financial capacity to implement the safest scenario. Practicality forces most businesses to deploy a compromise between availability and their budget. Another factor you must consider is to whom services and data must be available. This is where the service-level agreement comes into play.

You are unlikely to sign an SLA with company employees, but you will have such agreements with partners and customers. The SLA will define the specific parameters by which SharePoint 2007 services and information will be accessible and will include the level of availability you guarantee. Specific items addressed in a standard SLA can include the following:

- Level of availability
- Guaranteed number of simultaneous connections
- Advance notification for changes that may affect users
- Help desk response time
- Performance benchmarks
- Usage statistics

Although you can apply different SLAs on the same server farm, you may want to consider some of the following factors when you create your design.

If the SLA you signed with a customer includes a requirement for high-level security, you may want to implement their site collection on a separate server farm. This also gives you control over different authentication methods and access-control policies and results in separate content databases.

If you have agreed to provide a high level of web application performance, you may want to implement your SharePoint sites on a separate server farm.

Any agreement you sign that affects any significant aspect of the topology, configuration, and operations of the data center should most likely be implemented on a separate server farm.



Server farm topologies will be addressed in the “Designing Server Farm Topologies” section of this chapter.

Performance and Scalability

Performance is most commonly thought of as speed or responsiveness; that is, when accessing resources and traversing SharePoint sites, how quickly are you able to get where you’re going and get what you want? Many factors affect overall performance, including network throughput, server processor speed, number of concurrent connections possible, and so on. Availability, as previously presented, can also be included in performance measurements.

The general definition of scalability is the ability of a piece of hardware or software to continue to function well when the size or capacity of the environment is changed to meet user requirements. As a rule, scalability almost always refers to upward scalability or the ability of a system to continue to function well when it is enlarged.

As far as SharePoint performance and scalability in server farm design are concerned, the primary factors affecting performance are application profile, software boundaries, and throughput.

Creating more than one server farm based on application profile is usually a good idea when you are working with enterprise-level production environments. Catalog the different web applications that you will be using, and create a separate server farm for those applications that will see the largest demands. You can also organize several web applications into the same farm when they will see similar usage demands. For example, let’s say that applications A, B, and C will have similar usage to each other; D, E, and F will see similar usage to each other; and G, H, and I will see similar usage to each other. Organize A, B, and C in server farm 1; D, E, and F in server farm 2; and G, H, and I in server farm 3. As the number of users increases, application profiles may need to be altered. For instance, last year applications A, B, and C all had similar usage demands, but last month, your company created an entirely new department that equally needs to access applications A, B, and F. To properly scale, you’ll need to rethink your server farm design in terms of application profiles.

You can think of software boundaries as a logical interface between a piece of software and either the users accessing it or the hardware on which it runs. Think of it as the requirements that SharePoint and SQL have as applications for optimal performance on server hardware. The software/hardware boundary differs depending on what application you need to operate, how you need the software to perform consistently, and how much usage it will be getting. If you are installing SharePoint 2007 on a single piece of server hardware running one dual-core Intel Xeon 2.8GHz 64-bit processor and 2GB RAM, the software/hardware boundary will be different than if you are implementing a large number of blade servers, each running four dual-core Intel Xeon 2.8GHz 64-bit processors and 32GB RAM.

You can think of throughput both in terms of individual servers and PCs and as a measure of network performance. In a piece of server hardware, throughput is the amount of work the device can accomplish in a given period of time. In terms of a network, throughput is the amount of traffic that can traverse a network segment in a given period of time. In addressing a server

farm design, you will want to consider the actual hardware requirements for the server iron you are going to install, including CPU speed and RAM capacity. For network throughput, you will want to consider issues such as access-level, distribution-level, and core-level network speeds; the amount of traffic during normal usage; the amount of traffic at peak usage; and networking elements such as routers and switches in the topology. Especially in situations where a high level of network throughput is required, you may want to consider more than one server farm. As the number of users increases in your organization, resource demand will also increase, requiring you to either add more server hardware to your existing farm or create a new farm. Changing the data center topology by adding more high-capacity switches to accommodate more network traffic may also require either a redesign of the farm or the addition of a second farm.

As mentioned, usually performance and scalability needs to increase over time; however, if a company downsizes or sells significant portions of its holdings, the overall requirements may actually decrease. Also, a badly designed and bloated server farm may be costing the company more money to maintain than necessary. In either of these cases, a redesign of the server farm or farms to reduce the size and/or number of server farms would be required. Although everyone wants the biggest and baddest collection of server farms in existence, remember that they cost money to design, deploy, and maintain. The trick is to have just enough to satisfy requirements during optimal use without either causing horrible performance slowdowns or costing the company so much money that it has to come out of your paycheck.

Organizational and Security Requirements

Server farms are also designed based on how the company wants to organize resources, including services and data. Organization can be set up based on the company's hierarchy, functionality, geography, or just about any other criteria you can think of. For instance, size, location, and capacity of a particular server farm or farms can depend on funding sources, in other words, money. It's said that you get what you pay for, but you also have to be able to pay for what you want. The "perfect" server farm for your company's needs may be beyond your department's budget, so your design will have to reflect how much money you have to deploy and maintain it. Assuming (and it's a big assumption) that your budget will increase with the availability and performance requirements of the server farm, you may have the opportunity to expand an existing farm or to create additional farms over time; however, you will always have to balance performance, safety, and cost.

The structure of the company's organizational chart may also drive the design of your server farm and is the most common factor in how server farms are planned. This is especially true if your manufacturing plant is in Singapore but your software developers work in Boise. In this case, putting a single server farm in Phoenix (no earthquakes or hurricanes to worry about) will mean that everyone has to access SharePoint over a slow WAN link. It might make more sense to create a local server farm for each regional office and, if necessary, to back up to a separate, secure location that doesn't have to worry about many natural disasters.

If different divisions of your business or different regional offices have different security and authentication needs, you can create and deploy your server farms based on those requirements, and in fact, implementing security via isolation is the most straightforward method. In addition, government or corporate policies or contracts may require that security isolation be implemented physically rather than using software, even when physical

isolation won't actually increase security. MOSS 2007 uses different software methods to allow you to isolate different applications running in the same server farm:

- Implement isolation at the process level with separate IIS application pools.
- Implement isolation at the application level with separate web applications.
- Implement isolation at the audience and content levels with separate SSPs.

Designing Shared Services Providers

As mentioned earlier in the chapter, an SSP is the logical organization of web applications and their associated SharePoint sites used to access a common set of services and information. While the server farm is the top-level logical container for all of the SharePoint design elements, the SSP is the next highest logical object, and MOSS 2007 will fail to function without at least one SSP being configured. In fact, once you have installed the server farm, creating the default SSP is one of the first tasks you must accomplish.

If you set up only one SSP, all of your web applications must be associated with that SSP. Any individual web application can be associated with only a single SSP, so if your server farm contains more than one SSP, select to which SSP you want any individual web application associated. Any sites and site collections within SharePoint that are contained within a particular web application will use the services provided by the SSP associated with that application. Services provided by an SSP can be enabled or disabled only at the application level, not the site or site collection level.

All SSPs provide the following generic set of services:

Business Data Catalog This service provides a single unified schema for data stored in line-of-business applications.

Excel Services This service provides shared worksheets and methods of analyzing business information from data connection libraries using dashboard reports.

Personalization Services Personalization Services provides user profiles using information imported from directory services. This allows personal information about users located on their My Sites to be managed by privacy policies and shared by all users within the SSP.

Portal Usage Reporting This service lets SSP administrators view aggregated information about site usage across the entire site hierarchy and enables site and site collection admins to view these reports.

SharePoint Server Search This service creates a single index of all content, data, and metadata by crawling all SharePoint sites contained within the SSP's web applications.

At this point, it's important to note that a server farm can contain one or more SSPs, or the server farm can access services from an SSP contained in another server farm. This fact is critical to understand in terms of server farm design and implementation since a server farm accessing one or more SSPs on another farm does not have to contain any SSPs within its own farm. Think of this as the difference between hosting DNS services within your own domain and accessing DNS from an outside source. The caveat to using another farm's SSP is that sites within your farm will not be able to access Excel Services. If your site collection must provide Excel Services, your server farm must host SSP locally.

The most common deployment is to create a single SSP in a single server farm. A single SSP within your farm enables users to collaborate by sharing resources within your entire company. Enterprise-wide search is also available using a single SSP within the server farm. You will implement more than one SSP only if you have a specific need.



Creating more than one SSP within a server farm is more or less equal to creating an additional domain forest within Active Directory. It's a major undertaking with a great deal of additional administrative overhead attached. Although there are justifiable reasons for creating either more than one domain forest or more than one SSP, weigh the benefits and costs of that decision before going ahead.

The most outstanding need for creating multiple SSPs within a single server farm is security isolation. If you have more than one basic group of users accessing services within the farm and those different groups require different security for their content, develop an SSP for each group.

Previously, in the “Availability and Service-Level Agreements” section of this chapter, you read about how server farm design is affected by whether your consumers are employees accessing an intranet or customers and partners accessing an extranet. The differences between these consumers will also affect your SSP design since they all most likely will need different security levels. If you are planning to use a single server farm to service employees, partners, and customers, you will want to set up an SSP for each of these basic user types. Additionally, if you are going to allow the general public to access any portion of your SharePoint site collection via the Internet, you will need to create a separate SSP for that audience.



Most organizations create a separate web presence on the Internet for the general public that does not involve SharePoint access at all. Usually, web commerce involving the general public does not require potentially compromising SharePoint security. Best practices suggest allowing only preferred customers SharePoint access via an Internet-facing extranet requiring a logon.

Given the issues just stated, you should attempt to implement the smallest number of SSPs possible since each additional SSP that you deploy will reduce the overall performance of the server farm and thus SharePoint. Also keep in mind that security is not limited to just the server farm or SSP level. You can assign different users, departments, divisions, and so on, different levels of security access based on SharePoint groups.



Keep in mind that SharePoint group security implemented within a single SSP will prevent groups without the right privileges from accessing sites and site content, but content they can't access will still appear on the results page of a search.

Up until now, two or more SSPs have been treated like completely separate entities with no links between them, but it is possible to share information across different SSPs. This practice is discouraged for a number of reasons, not the least of which is that it defeats the purpose of creating more than one SSP in the first place. Shared content across multiple SSPs is not automatic and must be purposefully configured, such as adding the start address to an external content source to let one SSP crawl content on another SSP or using trusted MySite host locations to let users on one SSP view personalized information about users in another SSP. The bottom line is that if you don't absolutely need to enable this functionality, don't.

Designing Server Farm Topologies

The physical and logical topologies of a SharePoint Server 2007 server farm vary for a large number of reasons including security, customer requirements, and size. Topology designs can be created around the type of customer (intranet, extranet, and Internet) or based on the size of the server farm (small, medium, and large). Also, topologies for SharePoint 2007 can focus on either a single or multiple farm models. This section of the chapter will present topologies based on the most common examples of these design scenarios.



This section of Chapter 1 is not meant to take the place of a basic book on server and network topology design. The book assumes you already possess these skills.

Small-Scale Server Farm

A small-scale server farm might not seem very “farm-like” based on Microsoft's recommendations and is composed of only two physical servers:

- One server running SQL Server 2000 or 2005
- One server running Microsoft Office SharePoint Server 2007 and IIS

Medium-Scale Server Farm

This level of server farm is typically used for small to medium-sized business environments and contains three to four servers:

- One or two front-end web servers running Office SharePoint Server 2007 and IIS
- One application server running Office SharePoint Server 2007
- One server running SQL Server 2000 or 2005

In this traditional layout, the application server provides indexing services and Excel Calculation Services, and the front-end web servers provide search queries and web content services.

Large-Scale Server Farm

This is the minimum server farm configuration suitable for an enterprise-level SharePoint environment:

- Several load-balanced front-end web servers running Office SharePoint Server 2007
- Two or more application servers running Office SharePoint Server 2007
- Two or more clustered database servers running SQL Server 2000 or 2005

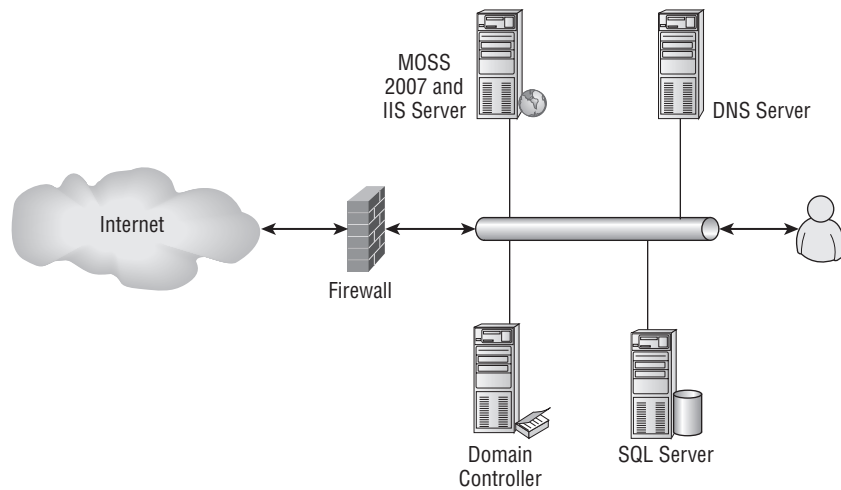
In this traditional layout, each of the application servers provides specific SharePoint Server 2007 services such as Index Services or Excel Calculation Services, and the front-end servers provide web content services.

All of the servers in your server farm must be running the same server software, which in this case is Office SharePoint Server 2007. You cannot add a physical server to the farm that is running different server software such as Microsoft Office Forms Server 2007. If you need Office Forms Server 2007 to run in your server farm, you must install both MOSS 2007 and Office Forms Server 2007 on each of your web servers.

In addition to what is specifically required for an Office SharePoint Server 2007 server farm, you will also need to provide Active Directory and DNS services. Figure 1.1 shows a simple example of this.

As you can imagine based on the examples of server farm topologies previously discussed, you could take Figure 1.1 and simply add the appropriate number and type of servers to change it from small to medium to large scale. Let's take this basic structure and apply it to different design requirements.

FIGURE 1.1 A simple server farm

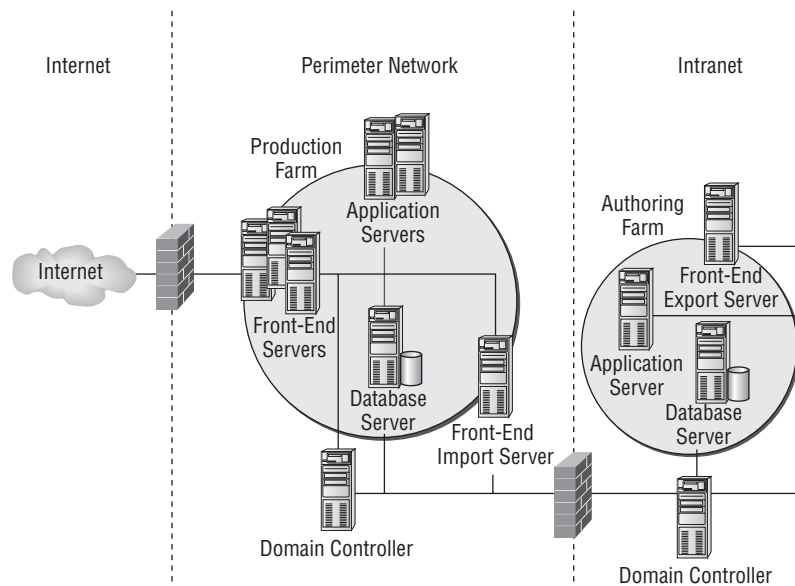


Intranet Server Farm Topologies

An intranet is the corporation's private SharePoint 2007 site collection. Ideally, the intranet is accessible only by company employees. Any information from the intranet that needs to be shared with partners or customers can be accessed via an extranet (see the following section). Intranet logical topologies consist of three general areas: the Internet, the perimeter network, and the corporate network. The intranet server farm exists in the corporate network. The Internet is the world's public network, which brings us to what stands in between the two—the perimeter network. This is often known as the *demilitarized zone* (DMZ) and is the portion of the overall business network that is facing the Internet.

In Figure 1.2 you can see a simple example of an intranet server farm topology.

FIGURE 1.2 Simple intranet server farm

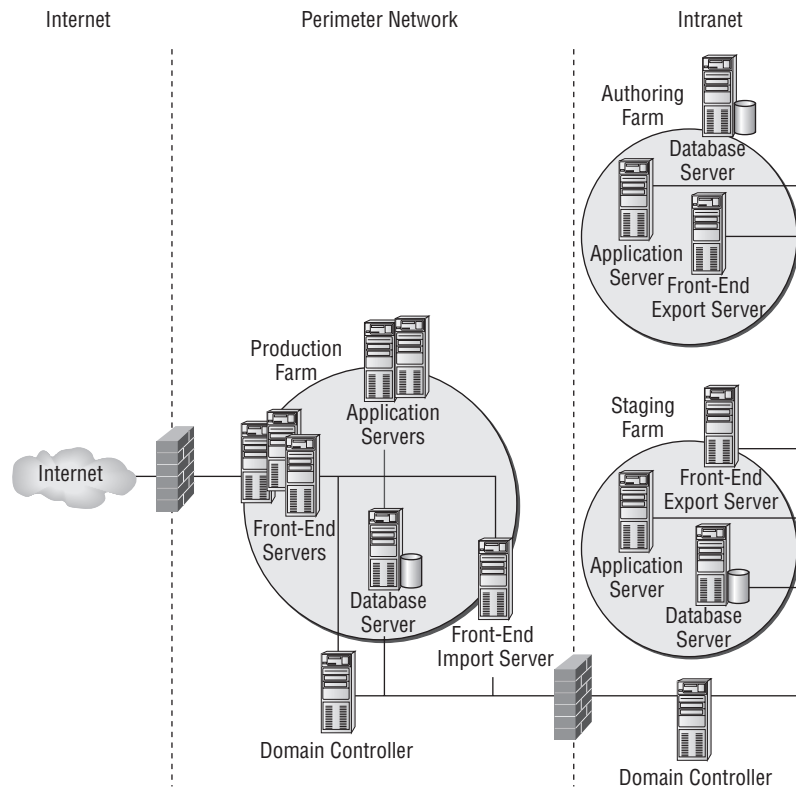


In this example, we assume that the intranet site is exclusively accessible from inside the corporate network and no component whatsoever can be accessed from the outside. In this case, the perimeter network exists as a barrier between the Internet and the corporate network to protect the intranet from intrusion. The safest way to do this of course would be to not connect the intranet to the Internet at all, but corporations often rely on Internet access to do research, send and receive email, conduct web conferences, and do other business-related activities. The perimeter network exists in this scenario because it's possible for the door to swing both ways. Without a barrier, an unscrupulous person would have a greater chance of getting unauthorized access to corporation data.

Although you can create an intranet server farm topology that serves only internal employees, it is more likely that you will want to allow at least some data and services to be accessed from

the Internet. This should be limited to content you absolutely need to have be accessed from the outside. If you need to offer extensive information to and collaboration with customers and partners, use an extranet scenario. Your company's web presence to the Internet-at-large should be handled using a more conventional website scheme. That said, Figure 1.3 describes how you can use the classic three-tiered design to offer some services from the intranet to the Web while maintaining a secure environment.

FIGURE 1.3 Three-tiered design



The following section will describe in more detail the server farm topology designs you would use to provide significant access to SharePoint content to the Web while protecting the internal intranet.

Extranet Server Farm Topologies

An extranet is a private network you allow specified users to access via the Internet. It is designed with the particular needs of specialized users such as partners and customers. An extranet site is an extension of the company's intranet site, but with its own security and identity. Content between the extranet and intranet can be separated so you share only the content from the intranet that is required by your extranet consumers.

Microsoft recommends a five-part plan for designing a SharePoint Server 2007 extranet:

The firewall plan In every extranet topology, the firewall solution of choice is Microsoft Internet Security and Acceleration (ISA) server. Of course, you can use any firewall technology your company wants to support.

The authentication and logical architecture plan An authentication and logical architecture plan must be established to allow external partners or customers to access restricted content on the extranet.

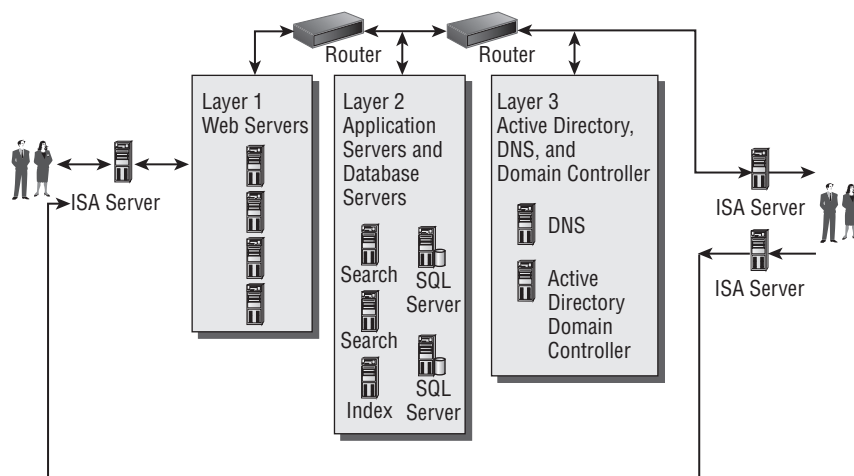
The domain trust relationships plan The server farm for an extranet is usually located in a perimeter network between the Internet-facing firewall and the intranet firewall (sometimes known as the DMZ). Separate Active Directory domains are maintained for the extranet and intranet, and by default, these domains do not have a trust relationship; however, your plan may need to include developing a trust based on a particular scenario.

The availability plan As presented earlier in this chapter, availability is the amount of time services are accessible on the system as related to the overall amount of time the system is in operation. Not all extranet consumers will need maximum availability, and this plan can include different levels.

The security hardening plan Security plans can include specific firewall and router configurations such as the use of custom port numbers, domain trust relationships, communication paths between server types, and other factors.

Like intranets, extranet logical topologies consist of three areas: the Internet, the perimeter network, and the corporate network. The Internet needs no introduction. The perimeter network is the logical and physical home of the extranet. The corporate network is the company intranet. Each area is separated from the next by specifically configured firewalls or routers. Figure 1.4 shows the most typical extranet topology scenario.

FIGURE 1.4 Typical extranet topology



The interior of the perimeter network is separated into three layers:

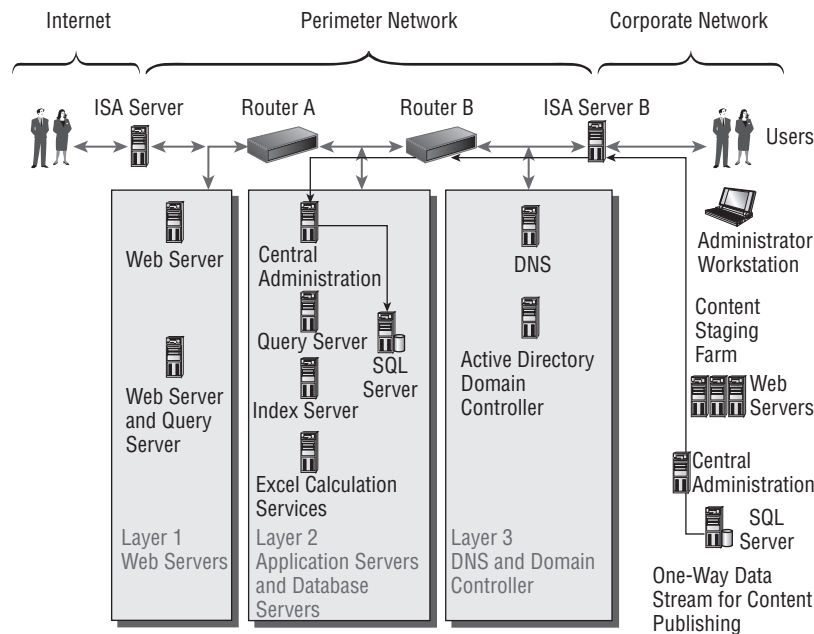
- The Web Servers layer
- The Application and Database Servers layer
- The Active Directory, DNS, and Domain Controller layer

As you can see in Figure 1.4, each layer within the perimeter network is separated from the next by a router so that each layer can exist on a separate subnet or network segment. This allows you to make sure that only specific requests for data and services are allowed to traverse the different layers in the perimeter network. This also allows you to limit damage in the perimeter network to one layer if the extranet is compromised from the outside.

Both the physical and logical server farm topology of the extranet exist in the perimeter network, making it easier to share resources and reducing administrative overhead. DNS and Active Directory for the extranet are managed within the perimeter network, which both improves performance and protects the Active Directory domain of the corporate network. The only real disadvantage of this design is that it requires a significant network infrastructure built exclusively to support the extranet.

In the previous example, there are actually two separate server farms in operation—the extranet server farm in the perimeter network and the intranet server farm in the corporate network. It is also possible to use a single server farm to manage both the extranet and the intranet, as shown in Figure 1.5.

FIGURE 1.5 Split back-to-back topology



The overall topology is still composed of the Internet, the perimeter network, and the corporate network, but the perimeter and corporate networks exist in the same server farm and share resources. You'll notice in Figure 1.5 that the extranet and intranet areas of the server farm are separated by firewalls. Although web servers are located in the perimeter network and database servers are located in the corporate network, application servers can be placed in either realm. If you choose to place your application servers in the corporate network, you must also place a domain controller in the same network to provide Active Directory services.

This scenario requires that you establish a trust relationship between the domains for the extranet and intranet. Without this domain trust in place, the web servers (and application servers if located there) will not be able to connect to the database servers unless you use SQL authentication. If you choose to use SQL authentication, the domain trust relationship does not have to be put in place.

Architecting the SQL Database Infrastructure

A lot of people don't think databases are "sexy." By this I mean "attractive" or "exciting" or an interesting topic of discussion. This isn't a book on Microsoft's MCDBA certification, so maybe you don't think databases are sexy either. However, this often-overlooked topic in MOSS 2007 server farm design is absolutely vital to the smooth operation (or operation at all) of your server farm and your SharePoint sites. After all, everything you see and work with in SharePoint such as web parts, libraries, lists, and workspaces actually lives somewhere in a SQL database.

Although SharePoint Server 2007 can use SQL Server 2000 Standard Edition or Enterprise Edition (SP3a or newer) for database storage, Microsoft recommends using a version of SQL Server 2005 unless you have a compelling reason not to do so. Cost is the most likely reason to stick with SQL 2000, especially if you are upgrading from SharePoint Server 2003 to 2007 on a limited budget and are trying to leverage as much of your existing infrastructure as possible. This would occur if you were implementing a phased upgrade plan where you were moving to MOSS 2007 and planning to upgrade to SQL Server 2005 at a later time.

That said, there are a number of good reasons to choose SQL Server 2005 for your database needs. SQL Server 2005 is a completely redesigned version of SQL and offers many new features. Your organization may not need to take advantage of 2005, but it's a good idea to review what's new in this version before making that decision. Here's a brief summary:

- Database snapshots
- Instant file initialization
- Page checksum and page-level restore combination
- Partitioning
- Read-only filegroups on compressed drives
- Row-level versioning

Listing all of the new features offered in 2005 and their explanations would be a chapter unto itself. To review the complete list, go to the following URL: www.microsoft.com/sql/prodinfo/overview/whats-new-in-sqlserver2005.mspx.

It's common to have to make decisions about upgrading software and equipment while planning to deploy MOSS 2007. This can include upgrading SQL Server. As you learned earlier in this chapter, even if you have an adequate budget, you still need to choose the right license for your needs.

Since database design is its own specialty, this section of the book will be relatively brief. In a real-life scenario, you would likely either have a database design specialist in-house performing this function or hire a consultant to do the job.

In the physical storage design of the SQL Server 2005 database, Microsoft recommends the following five-step plan:

1. Characterize the I/O workload of the application.
2. Determine the reliability and performance requirements for the database system.
3. Determine the hardware required to support the decisions made in steps 1 and 2.
4. Configure SQL Server 2005 to take advantage of the hardware in step 3.
5. Track performance as workload changes.

As with your server farm in general, it's important to build a database design that is scalable. If anything in your organization can be said to grow explosively over time, it is information. Although the topology diagrams previously presented in this chapter have often shown only one or two physical database servers, remember that there isn't always a one-to-one relationship between the "map" and the "territory." In real life, you would have more hardware implemented for failover and redundancy purposes.

Imagine your new company is creating a SharePoint server farm for your company's customers. Now imagine you're Amazon.com. Within a relatively short period of time, you have millions and then hundreds of millions of customers. The necessity for designing highly scalable database storage is amazingly obvious. Scaling up database servers can involve a couple of different methods:

- Symmetric multiprocessing (SMP), which means adding processors, memory, disks, and network cards to individual servers
- Adding servers to the topology and then partitioning workload and database storage across the individual servers, sometimes called *database partitioning*

The first option assumes you will be using a single physical server for your database storage needs. Although this may be practical in a small-to-medium-size server farm, you will (assuming your company and your company's database needs continue to grow) eventually hit the limit of how much you can physically upgrade an individual piece of hardware. Your one database server will become a bottleneck instead of a boon.

As you grow, you will find yourself adding database servers to your topology, or you may design multiple database server hardware into your topology from the beginning, depending on your organization's requirements. The second bullet will be the option of choice in that case, but there's a couple of different ways to deploy a multidatabase server plan:

- Deploy different elements of the overall database on different server hardware, such as putting a parts inventory on one server, your customer list on another server, and your shopping cart on yet another server.
- Deploy a single, large table across several physical servers.

In both cases, the partitioning of work and information should be transparent to your customers and to the applications accessing the database.



You can find a detailed paper on SQL Server scaling at the following URL:
www.microsoft.com/technet/prodtechnol/sql/2005/scddrtng.mspx.

A few paragraphs back, you imagined that you were designing a database architecture in your server farm for Amazon.com. The idea is to imagine your company's database needs not only for today but for the future. That is, you need to plan for the rate of content growth in your database.

It's not enough to know that your information storage needs will grow. That's obvious. The trick is to estimate how much your database storage needs will grow over what period of time. Add too much storage capacity too fast, and you spend money you didn't have to spend. (You have a budget, just like every other department in the organization.) Add too little capacity or add it too slowly, and you bottleneck your system.

In general, server farm design starts small and grows as requests for data and services grow. Broken down to its basic limits, a small server farm will be able to manage the following:

- Up to 2,000 SharePoint users
- Up to 50,000 SharePoint site collections with up to 2,000 subsites per website
- Up to 10,000 documents in a document library with individual documents of up to 50MB in size
- Up to 100 web parts per web part page

The list is not exhaustive, so don't believe these are the only items you need to keep in mind. One way to keep a certain amount of control over growth is to implement size quotas for SharePoint users. Size quotas are a common tool used in server administration when you don't have infinite storage space (and who does?) and when you need to control how much data users store on the system. You can also monitor your database with specific utilities such as the Management Pack for MOM. Microsoft provides MOM packs that are optimized for a wide variety of their products including MOSS 2007 and SQL Server 2005.



You can find details about MOM for SharePoint Server 2007 at www.microsoft.com/downloads/details.aspx?FamilyID=247c06ba-c599-4b22-b2d3-7bf88c4d7811&displaylang=en; you can find information about MOM for SQL Server 2005 at www.microsoft.com/downloads/details.aspx?FamilyID=79F151C7-4D98-4C2B-BF72-EC2B4AE69191&displaylang=en.

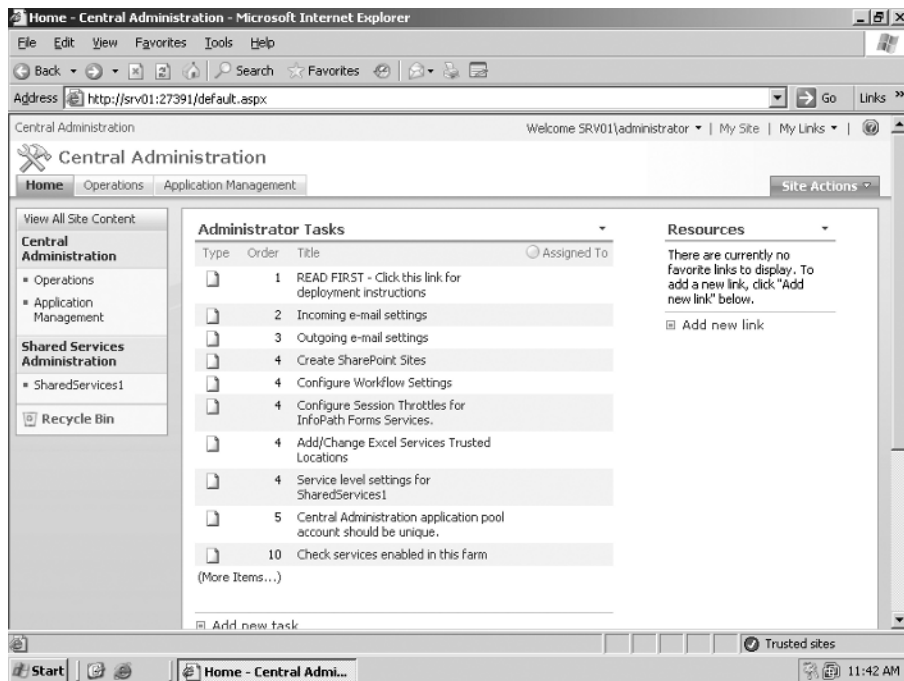
Introducing the Central Administration Interface

Although you won't encounter the Central Administration interface until after you install SharePoint in Chapter 2, "Installing and Deploying SharePoint 2007," this advance look should give you an idea of the initial post-installation tasks you'll be facing. You'll get a more detailed look at the Central Administration interface and how it operates in Chapter 3, "Configuring SharePoint 2007." Right now, you're just getting what my grandfather used to call "the 10-cent tour."

As shown in Figure 1.6, when you are on the Home tab of the Central Administration page, you'll see a list of the top 10 ordered administrative tasks. There are actually more than 10, which you'll see in a minute, but these are the ones you'll want to visit first.

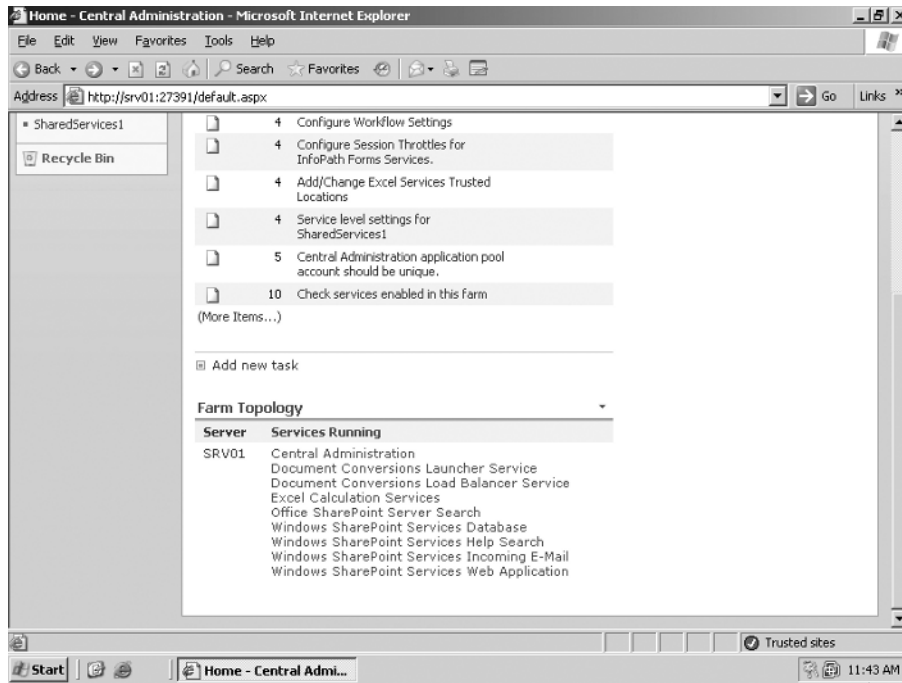
If you scroll to the bottom of the same page, you'll see a list of the services running on the server farm topology. As shown in Figure 1.7, this is a simple topology; in fact, all services, including database services, are running on a single server.

FIGURE 1.6 Central Administration page



NOTE Although you can run WSS database services on the same physical server as MOSS 2007, this is recommended only for a single-server farm topology that would service a fairly small business platform.

FIGURE 1.7 Simple server farm topology services list



If you want to see the complete list of post-installation administrator tasks, click the More Items link just below the top 10 administrator tasks. You'll be able to see the remaining items, as shown in Figure 1.8.

This is what a typical SharePoint list looks like. The columns of information presented here are the default, but as in any SharePoint list, the columns can be manipulated and filtered. The default Administrator Tasks columns are as follows:

Type The type of administrative task

Title The name of the administrative task

FIGURE 1.8 Full Administrator Tasks list

Action	Associated Service	System Task	Assigned To	Status	Order	Due Date
Configure Session Throttles for InfoPath Forms Services.	Configure InfoPath Forms Services	Yes		Not Started	4	
Add/Change Excel Services Trusted Locations	Add/Change Excel Services Trusted Locations	Yes		Not Started	4	
Service level settings for SharedServices1	Service level settings for SharedServices1			Not Started	4	
Central Administration application pool account should be unique.	Change service accounts.	Windows SharePoint Services Administration	Yes	Not Started	5	
Check services enabled in this farm	Check services enabled in this farm		Yes	Not Started	10	
Diagnostic logging settings	Configure diagnostic logging		Yes	Not Started	15	
Enable SSO in the farm	Enable SSO in the farm	SSOSRV	Yes	Not Started	15	
Add anti-virus protection	Configure anti-virus settings	SPWssService	Yes	Not Started	18	

Action What sort of action is required

Associated Service The service (such as SMTP) associated with the task

System Task Whether this is a system task (Yes or No)

Assigned To To whom the task is assigned

Status Whether the task has been started, is in progress, or has been completed

Order The order or priority of the task

Due Date When the task is expected to be completed

%Complete The percentage of the task that has been completed

As you can see in Figure 1.9, when you click the title of one of the tasks, you are taken to a detailed page describing that specific task. This includes information on all of the columns that have just been described. Clicking the Edit Item button will let you update the information in any of the columns, as illustrated in Figure 1.10.

FIGURE 1.9 Administrator Tasks detail page

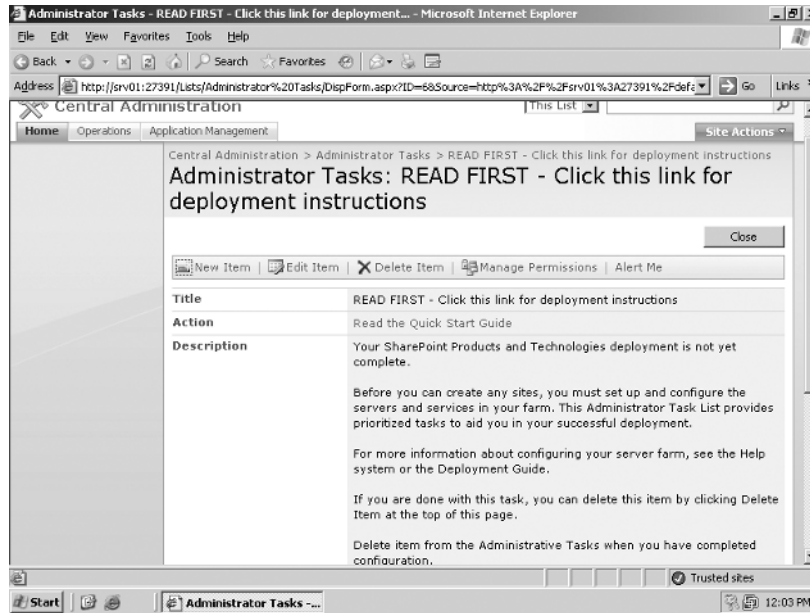
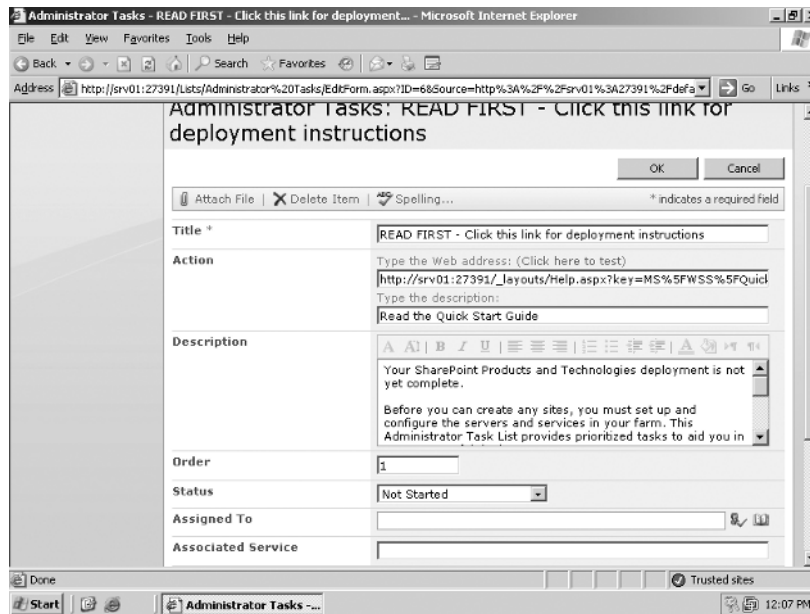


FIGURE 1.10 Administrator Tasks edit page



Summary

In this chapter, you were introduced to Microsoft Office SharePoint Server 2007 and learned the following topics:

- What's new in MOSS 2007 including the basic roles of business intelligence, business process and forms, collaboration, enterprise content management, Enterprise Search, and portals
- The primary elements in planning SharePoint 2007 architecture
- The components of architecting SharePoint including the server farm, shared services providers, database services, web applications, and SharePoint site collections
- The specific factors involved in architecting server farms including server farm design architectures, designing shared services providers, and designing server farm topologies
- Architecting of the SQL database infrastructure including physical storage design, database server scaling, and database content growth management
- Introduction to the Central Administration interface including post-installation administrator tasks and how they are organized

Exam Essentials

Understand how to manage administration. Understand the basic tasks in administering SharePoint Server 2007 from the planning and design stages.

Know how to manage the Central Administration user interface. Understand how to organize post-installation administrator tasks.

Review Questions

1. You are a consultant training a group of server administrators on the latest features of Microsoft Office SharePoint Server 2007. You are describing the services typically provided by the shared services provider (SSP). Which of the following services are you discussing? (Choose all that apply.)
 - A. Database Services
 - B. Excel Services
 - C. Index Services
 - D. Web Services

2. You are a SharePoint 2007 administrator for your company, and you have been tasked with designing a server farm for your organization's external partners and internal employees. You are told to create an environment where partners and employees can collaborate freely on mutual projects and does not require that the company purchase Client Access Licenses (CALs) for either the partner or employee users. Of the following options, which is the best choice?
 - A. Create an intranet site on the server farm hosting the extranet, and purchase the Microsoft Office SharePoint Server 2007, Server License.
 - B. Create an extranet site on the server farm hosting the intranet, and purchase the Microsoft Office SharePoint Server 2007, Server License.
 - C. Create an extranet site on the server farm hosting the Internet, and purchase the Microsoft Office SharePoint Server 2007 for Internet Sites license.
 - D. None of the above.

3. You are part of the design team that has been tasked with planning a SharePoint Server 2007 deployment for your business. Your company currently uses SQL Server 2000 SP2 for database services. You are required to determine whether this version of SQL Server will support MOSS 2007 and, if not, what upgrade option is available at the least financial and administrative cost. Of the following options, which choice best fits?
 - A. SQL Server 2000 SP2 will support MOSS 2007.
 - B. You must upgrade to SQL Server 2000 SP3a.
 - C. You must upgrade to SQL Server 2005 SP1.
 - D. You must upgrade to SQL Server 2005 SP2.

4. You are the SharePoint administrator for your company. The database content storage needs for your company's SharePoint 2007 server farm are growing rapidly, so you are working with your company's database administrator to determine the best scale-up plan for your SQL Server. You have SQL Server 2005 running on a single hardware server, and the processors and RAM have already been upgraded to their maximum limit. What options are available to scale up the database? (Choose all that apply.)
- A. Deploy different elements of the overall database on several different servers.
 - B. Deploy a single, large table on a single SQL Server, and deploy a second server to provide mirroring services.
 - C. Deploy a single, large table across multiple SQL Server instances.
 - D. Run Windows SharePoint Services (WSS) database services on the same physical server as MOSS 2007.
5. You are the SharePoint administrator for your company. The CIO wants you to integrate Microsoft Office Project Server 2007 and Microsoft Office Forms Server 2007 into the SharePoint server farm. Of the following options, which one is the most viable solution?
- A. Add two physical web servers to the server farm. Install Project Server on one of the hardware servers and Forms Server on the other hardware server.
 - B. Add one physical web server to the server farm, and install both Project Server and Forms Server on it.
 - C. Install Project Server and Forms Server on each one of the hardware web servers running MOSS 2007.
 - D. Install Project Server and Forms Server on just one of the hardware web servers running MOSS 2007.
6. Your company has just signed a service-level agreement (SLA) with one of its partners to provide a SharePoint extranet service for collaboration purposes. The agreement states that your company will guarantee high availability, and in the event of a service outage, you will return the extranet site to service within two hours of failure with a minimal loss of data. What fault-tolerant solution will come closest to meeting the terms of this agreement at the most economical cost?
- A. Deploying a hot server solution
 - B. Deploying a warm server solution
 - C. Deploying a cold server solution
 - D. None of the above

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7. You are a SharePoint 2007 consultant working with a customer's IT department staff on plans for an extranet server farm design. You are outlining Microsoft's recommended plan for extranets, and you are asked what part of the plan addresses custom port numbers and communication paths between server types. Of the following options, what is the best answer?
- A. The firewall plan
 - B. The authentication and logical architecture plan
 - C. The domain trust relationships plan
 - D. The availability plan
 - E. The security hardening plan
8. You are the SharePoint administrator for an enterprise-level software company. You have created a single server farm for the organization's employees. You have deployed five separate, custom-designed web applications in the farm that the software engineers you support need for development and testing purposes. You've noticed that two of the applications are used heavily while the other three are accessed with the same but much lighter frequency. This has caused a performance slowdown in the entire server farm. What is the best plan for improving performance based on the application profile?
- A. Create a second server farm, place the two web applications that are more heavily used in the second farm, and leave the other three on the first farm.
 - B. Create a separate server farm for each custom-made web application.
 - C. Upgrade the processing and memory capacity of the hardware server hosting the more heavily used applications, and add a second network interface card.
 - D. Install a higher-speed switch in the data center to improve access speeds.
9. You are the SharePoint site administrator for a company called Applepaste, Inc. The site collection at Applepaste is organized by department. Brad, the manager of the engineering department, has asked you to create a subsite for his department called *projects*. He specifies that he needs a special projects site and that the first special project for his team is the Tantalus Project. This special project will need to contain a list of links entitled Plouto Research. Once you create this resource, Brad wants you to send him an email containing the managed path to the lowest-level resource. What is the path you will send him?
- A. /applepaste/engineering/projects/special_projects/tantalus_project/links/plouto_research
 - B. /applepaste/engineering/projects/special_projects/tantalus_project/plouto_research
 - C. /applepaste/engineering/projects/tantalus_project/plouto_research
 - D. /applepaste/projects/special_projects/tantalus_project/plouto_research
 - E. /engineering/projects/special_projects/tantalus_project/plouto_research
10. You are the SharePoint administrator for your company. You are working with Mary Jean, who is the security specialist in your company's IT department, to develop a new SharePoint site collection for the HR department. All of the content for the HR department must be kept separate from the rest of the company's SharePoint intranet sites. What form of security isolation would be most suitable?
- A. Process-level isolation
 - B. Application-level isolation
 - C. SSP isolation
 - D. Database isolation

11. You are a consultant hired by the Magnotronics Corporation to upscale their SharePoint 2007 server farm. Magnotronics has seen extremely rapid growth in the past two years and has quickly outgrown its current server farm, based on a small-scale model. Currently, the farm has only two hardware servers, one running MOSS 2007 and IIS and the other running SQL Server 2005. You determine that its needs can be met by scaling up its server farm based on a large-scale model. Of the following options, what is your recommendation based on the minimal requirements for this model?
- A. Add several load-balanced front-end web servers running MOSS 2007, two application servers running MOSS 2007, and at least one more server running SQL Server 2005.
 - B. Add several application servers running MOSS 2007, one load-balanced front-end web server running MOSS 2007, and two or more clustered database servers running SQL Server 2005.
 - C. Add one load-balanced front-end web server running MOSS 2007, one application server running MOSS 2007, and one server running SQL Server 2005.
 - D. Add five load-balanced front-end web server running MOSS 2007, three application servers running MOSS 2007, and three clustered database servers running SQL Server 2005.
12. You are the SharePoint administrator for your company. You have just finished installing MOSS 2007 and are on the Home tab of the Central Administration page. Under Administrator Tasks, you click the More Items link to view the entire list of post-installation tasks. What items are included on that list? (Choose all that apply.)
- A. Create SharePoint sites.
 - B. Enable SSP in the farm.
 - C. Configure workflow settings.
 - D. Incoming Email Settings.
 - E. Outgoing Email Settings.
13. You are the SharePoint administrator for your company. You have just finished installing MOSS 2007 and are on the Home tab of the Central Administration page. Under Administrator Tasks, you click the Incoming Email Settings link to open this task. You are going to assign this task to Mike. What do you have to do to add Mike's name to the Assigned To column?
- A. Click the New Item button.
 - B. Click the Edit Item button.
 - C. Click the Modify Item button.
 - D. Click the Assigned To button.
14. You are the SharePoint administrator working at your company's main office in Seattle. You have been tasked with creating a SharePoint server farm topology for a new regional office in Nashville. You start by sketching a very simple intranet topology where only a firewall separates the Internet from the corporate network. This is usually an unrealistic design. In a production intranet model, what area would exist between the Internet and the corporate network?
- A. The parameter network
 - B. The security network
 - C. The perimeter network
 - D. The distribution network

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- 15.** After you have finished the intranet design for the Nashville office, you are asked by your manager to design a simple extranet farm topology for a branch office in Oklahoma City. You present the design to Sue, the branch manager, and she asks you about the different layers in the perimeter network containing the extranet server farm. Of the following options, which one is the best explanation?
- A.** Layer 1 contains the web servers for the extranet, Layer 2 contains the application and database servers, and Layer 3 contains the DNS server and domain controller. ISA servers separate Layer 1 from the Internet and Layer 3 from the corporate network.
 - B.** Layer 1 contains the web and application servers, Layer 2 contains database servers, and Layer 3 contains the DNS server and domain controller. ISA servers separate Layer 1 from the Internet and Layer 3 from the corporate network.
 - C.** Layer 1 contains the web servers for the extranet, Layer 2 contains the application and database servers, and Layer 3 contains the DNS server and domain controller. ISA servers separate Layer 1 from the Internet, Layer 2 from Layer 3, and Layer 3 from the corporate network.
 - D.** Layer 1 contains the web and application servers, Layer 2 contains the database servers and the domain controller, and Layer 3 contains the DNS and DHCP servers. ISA servers separate Layer 1 from the Internet and Layer 3 from the corporate network.
- 16.** After you present your initial design to the Oklahoma City branch manager, she consults with her CIO and IT security specialist, and they ask you to modify your design and present an alternative topology. You create a split back-to-back topology with both the extranet and the intranet sharing database services located on a SQL Server in the corporate network. Since the perimeter and corporate networks exist inside different Active Directory domains, what options can you present that will allow the perimeter network to access the database server in the corporate network? (Choose all that apply.)
- A.** Establish a trust relationship between the domains for the extranet and intranet.
 - B.** Use SQL authentication.
 - C.** Use SSO authentication.
 - D.** Place the extranet and the intranet in the same domain.
- 17.** Once you have finished reviewing extranet topology designs for the Oklahoma City branch office, they ask you to take a look at their current intranet structure. Loren, the server administrator, tells you that recently their SharePoint sites have been experiencing some performance slowdowns. You discover that their intranet is based on a small server farm design. You review the logs and discover that there are areas where they have exceeded the limits of this design. Of the following options, which ones exceed small server farm limitations? (Choose all that apply.)
- A.** 3,000 SharePoint users
 - B.** 10,111 site collections with an average of 1,500 subsites per website
 - C.** 5,000 documents per document library with each document being an average of 20MB in size
 - D.** An average of 150 web parts per web part page

18. In reviewing the extranet topology plans with Sue and Loren at your company's Oklahoma City branch office, they seem to be leaning toward a simple extranet design setup with Layer 1 containing the web servers for the extranet, Layer 2 containing the application and database servers, and Layer 3 containing the DNS server and domain controller. ISA servers separate Layer 1 from the Internet and Layer 3 from the corporate network. Of the following options, which ones describe the advantages of a simple extranet topology? (Choose all that apply.)
- A. Ease in sharing resources between layers in the perimeter network
 - B. Improved performance
 - C. Separate domains for the perimeter and corporate networks
 - D. Significant network infrastructure for the perimeter network
19. Given the recent issues your company's Oklahoma City branch office has been having monitoring the growth of their intranet, you recommend that they implement the Microsoft Office SharePoint Server 2007 Management Pack in order to better keep tabs on critical events occurring on the system. You are asked to describe the advantages of using this tool. Of the following options, which are advantages to using Microsoft Operations Manager (MOM) for MOSS 2007? (Choose all that apply.)
- A. Sends an alert when shared services provider (SSP) provisioning has failed
 - B. Monitors the available space in databases, configurable by percent or megabyte
 - C. Monitors the health of replication and sends an alert on failures
 - D. Sends an alert when the Central Administration site for the SSP is missing
 - E. Sends an alert when the Office Document Conversions Launcher service is not running
20. You are a SharePoint consultant and are giving a presentation on the advantages of deploying MOSS 2007 to the executives of the Minos Development Group. They are particularly interested in the Business Intelligence (BI) capacities of SharePoint and want to hear more details about this area. Nicole, the chief marketing manager, wants to hear about which BI features would help track progress made toward specific business goals. You mention that SharePoint BI uses specialized lists and web parts that let the user visually track these indicators. Which BI feature are you describing?
- A. Key performance indicators (KPIs)
 - B. Dashboards
 - C. Business Data Catalog (BDC)
 - D. Report Center site

Answers to Review Questions

1. B, C, and D. A shared services provider is the logical environment that contains all of the particular services that you want to make available across your web applications and SharePoint sites. Those services include Excel Calculation Services, Index Services, Search Services, and Web Services. Database services are usually provided by some version of Microsoft SQL Server.
2. C. You can create an extranet site on the server farm that is hosting your company's Internet site and using the Internet Sites license. This option doesn't require you to purchase CALs for partners, customers, or internal employees working on collaborative projects. However, you will not be able to create sites in this server farm that are accessed only by internal employees.
3. B. Although options B, C, and D will all support MOSS 2007, option B will do so at the least financial and administrative cost.
4. A and C. Options A and C are the only two viable options. Although option B, installing another SQL server for mirroring, will provide a fault tolerance solution should the primary database server fail, it does nothing to solve the database storage problem. Although option D is a possibility if you are running MOSS 2007 in a single-server design, you cannot run WSS database services on the server hosting SharePoint and use a separate database server to increase storage capacity.
5. C. All of the servers in your SharePoint server farm must be running the same server software. You cannot add a physical server to the farm that is running different server software such as Project Server 2007 or Forms Server 2007. If you need Project Server or Forms Server to run in your server farm, you must install MOSS 2007, Project Server, and Forms Server on each of your web servers.
6. B. The warm server solution is the best option for restoring service within two hours and with a minimal loss of data since the warm server is almost immediately available and can restore data from the most recent period of replication. Although option A, the hot server solution, would return service nearly at once with no loss of data, it is not the most economical option, and the SLA did specify that some data loss was acceptable. Option C, the cold server solution, is not viable since two hours would not be enough time to repair or replace failed server hardware and restore data from a tape backup.
7. E. Option E, the security hardening plan, can include specific firewall and router configurations such as the use of custom port numbers, domain trust relationships, communication paths between server types, and other factors.
8. A. Options C and D would likely improve performance, but not based on the application profile that requires grouping applications in different server farms based on similar usage, as stated in Option A. Option B would likely improve performance but at a much greater administrative cost than option A.
9. B. Based on the stated requirements, option B is the correct answer. The root to the managed path is typically the company name, which is Applepaste. Since the SharePoint site collection for Applepaste is organized by department, engineering is the next level. Brad requested a sub-site named *projects* and within projects another site named *special projects*. The first project in the special projects container is named Tantalus Project, and the links list is called Plouto Research. Links or any other list does not have to be located in a container such as *links* found in Option A.

10. C. To isolate the HR sites from the rest of the corporate intranet at the audience and content level, create a separate SSP for the HR department in the server farm.
11. A. The minimum configuration for the large-scale server farm model includes several load-balanced front-end web servers running Office SharePoint Server 2007, two or more application servers running Office SharePoint Server 2007, and two or more clustered database servers running SQL Server 2000 or 2005.
12. A, C, D, and E. All of the options are on the list except option B, which is bogus. If option B were Enable SSO (Single Sign-On) in the farm instead of Enable SSP (Shared Source Provider) in the farm, it would have been correct.
13. B. Click the Edit Item button to open the task for editing, and then type Mike's name into the Assigned To field. You would click the New Item button if you wanted to add a new task to the Administrator Task list. The other two options are bogus.
14. C. Generally, in any intranet or extranet scenario, you would place the perimeter network between the Internet and the corporate network, as in option C. The perimeter network is sometimes called the *demilitarized zone* (DMZ). Options A and B are bogus.
15. A. Option A describes a simple extranet design with three layers in the perimeter network. Although option C is also a valid extranet design, it is more security hardened than the simple topology you were asked to create. Options B and D are bogus.
16. A and B. By default, the extranet and intranet domains do not have a trust relationship, but as in option A, you can create this. You can also use SQL authentication as a viable solution as in option B. Option C, single sign-on authentication (SSO), would not apply in this case, and option D, placing the extranet and intranet in the same domain, would potentially give extranet users unauthorized access to intranet resources.
17. A and D. The small server farm design can support up to 2,000 SharePoint users only and 100 web parts per web part page.
18. A, B, and C. Both the physical and logical server farm topology of the extranet exist in the perimeter network, making it easier to share resources and reducing administrative overhead. DNS and Active Directory for the extranet are managed within the perimeter network, which both improves performance and protects the active directory domain of the corporate network. The only real disadvantage of this design is that it requires a significant network infrastructure built exclusively to support the extranet.
19. A, D, and E. Options A, D, and E are available on MOM for MOSS 2007. Options B and C are available on MOM for SQL Server 2005.
20. A. Key performance indicators (KPIs) use specialized lists and web parts in SharePoint that let you visually track progress made toward specific business goals.

